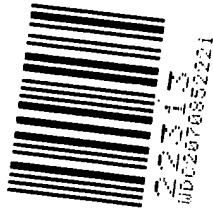


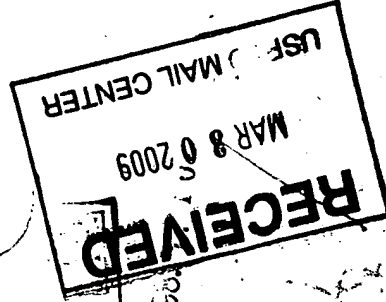
Organization 163/00 Bldg/Rm 163/00
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
If Undeliverable Return in Ten Days

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300

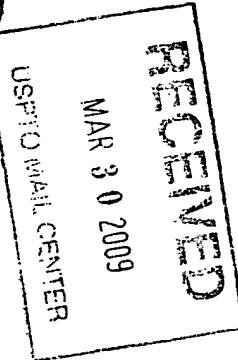
AN EQUAL OPPORTUNITY EMPLOYER



NO SUCH
STREET NUMBER



NO SUCH
STREET NUMBER





IFW

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/711,798 | 10/06/2004 | Chiu-Hao Cheng | | 5797 |

43333 7590 12/31/2008
ZEROPLUS TECHNOLOGY CO., LTD.
2F-4, NO. 184, SEC. 4, CHUNG HSIAO EAST ROAD
TAIPEI,
TAIWAN

| EXAMINER |
|------------------|
| SZABO, STEPHEN J |

| ART UNIT | PAPER NUMBER |
|----------|--------------|
| 3714 | |

| MAIL DATE | DELIVERY MODE |
|------------|---------------|
| 12/31/2008 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

works of Cicero and Xenophon among the ancients, of Sir Thomas More, Bacon, Baxter, or, to refer, at once, to later and contemporary instances, Darwin and Roscoe, are at once decisive of the question.

"Whatever be the profession or trade chosen, the advantages are many and important, compared with the state of a mere literary man, who, in any degree, depends on the sale of his works for the necessaries and comforts of life. In the former, a man lives in sympathy with the world in which he lives. At least, he acquires a better and quicker tact for the knowledge of that with which men in general can sympathize. He learns to manage his genius more prudently and efficaciously. His powers and acquirements gain him likewise more real admiration, for they surpass the legitimate expectation of others. He is something besides an author, and is not therefore considered merely as an author. The hearts of men are open to him, as to one of their own class; and whether he exerts himself or not in the conversational circles of his acquaintance, his silence is not attributed to pride, nor his communicativeness to vanity. To these advantages I will venture to add a superior chance of hap-

piness in domestic life, were it only that it is as natural for the man to be out of the circle of his household during the day, as it is meritorious for the woman to remain for the most part within it. But this subject involves points of consideration so numerous and so delicate, and would not only permit, but require such ample documents from the biography of literary men, that I now merely allude to it *in transitu*. When the same circumstance has occurred at very different times to very different persons, all of whom have some one thing in common, there is reason to suppose that such circumstance is not merely attributable to the persons concerned, but is in some measure occasioned by the one point in common to them all. Instead of the vehement and almost slanderous dehortation from marriage, which the 'Misygyne Boccaccio' (*Vita e Costumi di Dante*, p. 12. 16) addresses to literary men, I would substitute the simple advice: be not merely a man of letters! Let literature be an honourable augmentation to your arms, but not constitute the coat, or fill the escutcheon!

"It would be a sort of irreligion, and scarcely less than a libel on human nature, to believe that there is any established and reputable pro-

fession or employment, in which a man may not continue to act with honesty and honour; and, doubtless, there is likewise none which may not at times present temptations to the contrary. But wofully will that man find himself mistaken, who imagines that the profession of literature, or (to speak more plainly) the *trade* of authorship, besets its members with fewer or with less insidious temptations, than the church, the law, or the different branches of commerce.”

Charles Lamb himself subscribes to this opinion of Coleridge, and urges it upon one of his friends with great force; and Herder is quoted by Coleridge in support of his own opinion, as follows:

Translation.—“With the greatest possible solicitude avoid authorship. Too early, or immoderately employed, it makes the head waste and the heart empty, even were there no other worse consequences. A person who reads only to print, in all probability reads amiss; and he who sends away through the pen and the press, every thought, the moment it occurs to him, will in a short time have sent all away, and will become a mere journeyman of the printing office, a compositor.”

So much for the opinion of great authors on the character of their trade.

In all these observations you find it distinctly admitted that the fancy, the imagination, the creative powers of the mind are not to be taxed for the purposes of mere support. They say it is better to work for a living at some business which is mechanical, by way of a regular trade or profession, and to give the genius free play in the hours of recreation. That such a distribution of one's time may produce the happiest effect is abundantly apparent from the experience of all ages. Without adverting to the busy life led by Cicero and Quintilian, whom I esteem among the best authors of ancient times, we may come down at once to the moderns. Bacon, the prince of philosophers, was a lawyer laboriously active in his profession during the greater part of his life; Shakespeare, the most admirable of all writers, was a player and manager, and was obliged to work hard at the mechanical part of these laborious employments; Raleigh was a soldier and statesman, one of the most active of his age; Clarendon was a busy statesman and lawyer; Addison was secretary of state while he was writing the Spectator; Walter Scott was a writer for

the signet, and sheriff of the county ; and it is a curious fact that this writer, the most prolific as well as the best of our century, passed his days in bodily labour, riding about the county or working at his profession. It was remarked that nobody could conjecture when it was that he found time to write his voluminous works.

If we come to our own country, the examples are more numerous. All our best authors are working men. Prescott is a lawyer ; Bancroft, a teacher for some years, and afterwards collector of the port of Boston ; Charles Sprague is a bank clerk ; Halleck collects Mr. Astor's rents ; Dana is a lawyer ; Longfellow, a teacher. In fact, with us, authorship is seldom a profession. Most of our literature has been produced in the leisure hours rescued from laborious occupations.

Our scientific and useful inventions too have generally resulted from the very course which I am desirous to recommend to the mechanic, viz. : that of honouring his trade by adorning it with intellectual recreations. Fulton was a portrait painter, who amused himself in his idle hours with experiments on steam power ; Whitney, the inventor of the cotton gin, was a machinist, whose judicious employment of his

leisure moments led him to an invention which has trebled the value of cotton lands at the South; Whittemore, of West Cambridge, who invented the machinery for the manufacture of cards, was, if I recollect right, a cabinet maker. The case of Franklin is familiar to all.

All these examples tend to establish the same truth,—that a mechanical business, a life of activity and labour, is far from being unfavourable to the highest operations of the intellect; and that relaxation from active labours is most appropriately found in mental recreations.

CHAPTER IV.

THE MECHANIC SHOULD DEVOTE HIS LEISURE TO THE GENERAL INTERESTS OF HIS TRADE.

ONE more duty I would urge upon the mechanic, in order to the finishing of his character of a useful, happy and respectable man. Having attained wealth at the time of life when it is desirable to cease from active labour, I would have him devote himself to the general interests of his trade.

There are many ways in which the wealthy mechanic may promote the general interests of his trade, when he has retired from all participation in its labours or profits.

He may give a tone to its society by exercising a refined and judicious hospitality. He may make his house the resort of kindred spirits, who will unite with him in their endeavours to retain men of talent and influence in the trade. He may assist young men who are entering upon business for themselves with money, credit and good advice. He may save many a brother from ruin by interposing a friendly

voice, and a helping hand at the critical moment when they are most needed. He may become in his old age the Mécenas, as well as the Nestor of his fraternity, by patronizing the intellectual efforts of their leisure hours.

Such was the course of Franklin; and his munificent aid ceased not with his life. In his will a permanent fund was established for aiding the young mechanics of his native place by loans of money. The example of his life, however, has been of more value than a legacy of millions. He was a mechanic who fulfilled the several conditions which we have been considering as necessary to happiness, usefulness and respectability. He made himself a thorough master of his trade; he adhered to it till the imperative call of his suffering country compelled him to relinquish it; and he honoured his trade by seeking distinction in it, and by adorning it with intellectual recreations. Long may his example be imitated by his countrymen—long may his race live and flourish in the land. Such mechanics are the bulwark of our free institutions. While we have men of the Franklin stamp among us, we shall never want a supply of heroes and statesmen to perform great and brilliant actions, or poets, historians and orators to celebrate them.

CHAPTER V.

MISDIRECTION OF INDUSTRY—PREJUDICES
AGAINST THE MECHANICAL TRADES.

Among the many causes which have led to the present depressed state of affairs in our country, there is one which appears to me an efficient one, although it has been in a great measure overlooked. This is the misdirection of industry—of productive labour. All observers readily perceive that *capital* has been thrown away; few take notice of the fact that hands and heads have been employed on works that are now known to be utterly useless. Railroads, for example, have been constructed, which can never, by any possibility, be required for the public accommodation to such an extent as to pay the expense of keeping them in repair and employing lines of cars upon them. Mines have been opened and wrought in situations where no veins of metal existed, although the imaginations of the stockholders, aided by the fine stories of some cunning Dousterswivel, had made each of the re-

MISAPPLICATION OF TIME AND TALENTS. 217

gions a perfect El Dorado. Even agricultural labour has been misapplied; for trees have been planted and nursed with the greatest care, under the impression that their leaves were to be converted into silks which should rival the fabrics of Lyons and Benares; and yet these very trees have subsequently been cut down as cumberers of the ground.

The productive industry of this country might just as well have been employed in the construction of pyramids, like those of the ancient Egyptians, as on works of this nature. It is literally labour, time, and talents thrown away.

But these are not the only ways in which labour, time and talent have been misdirected. Thousands of our young men have entered the learned professions when they were already crowded, and are consequently wasting their lives in vain hopes; and other thousands have devoted themselves to the pursuits of commerce without capital, prudence, or intelligence sufficient to avoid the dangers of commercial enterprize; and these men are now either bankrupts, or involved in a series of embarrassments which may last through their whole lives. An error in the choice of one's profession is one which is followed by painful consequences, as

many have found to their cost. In this country we are apt to be too ambitious and restless. The freedom of our institutions, instead of impressing upon us the wholesome lesson that all men are naturally equal in dignity, and that consequently every trade and profession may be ennobled by the personal merit of its members, leads men to aspire to certain professions which they esteem genteel; and to high offices which the constitution has made attainable by citizens of all classes.

This is wrong. An American should respect himself. A citizen of this republic should deem himself a peer of the world—one of nature's noblemen. He should consider that the circumstance of his being an American citizen is sufficient to adorn with all proper dignity any trade or profession which he may adopt. Having settled this point with himself, he is left at perfect liberty to look around with an unprejudiced mind, upon the different modes of obtaining subsistence and making himself useful to the community; and he can make his choice upon the same principles that should govern him in deciding any practical question. In taking a survey of some large community with reference to the success which has attend-

ed the exertions of other men, in order to aid his judgment in the choice of a profession, the youth or his adviser may peradventure, arrive at some results which he did not anticipate.

Suppose, for example, that he should examine the comparative success of those men whom we know to have devoted themselves to *mechanical* trades, and those who have become *merchants*. Would it not be apparent that where one mechanic has failed and caused extensive losses to his friends and the community, ten merchants have done the same thing? On the other hand, would it not appear that where one merchant had acquired a competent fortune and retired from business in the decline of life, several mechanics have done the same thing? If we were to run over the list of persons taxed for real estate, should we not find more mechanics than merchants living in their own houses, and deriving a handsome income from their rents?

If it be said that this not a fair test of comparative success, let another be resorted to. Take the whole number of persons employed in mechanical trades, and the whole number of persons employed in commerce, say for the last twenty years; then calculate what per centage

19*

of each class has failed, what per centage has gained a decent subsistence without failing, and what per centage has arrived at what is called independence. The result of such an inquiry would satisfy the inquirer that it is a safer course to become a mechanic than to be a merchant.

The prejudice against the mechanical trades is a relic of feudalism unworthy of our free country. Considered with reference to those old feudal prejudices, all the pursuits by which bread is earned in our country are equally base. Considered in the light of republican philosophy, they are all equally honourable. The baron of the middle ages, who could not read or write, looked down upon the merchant, the mechanic, and the lawyer with equal contempt; and the baron of modern days, who cannot even wield a lance, considers himself superior to the greatest, wisest, and best of those who were born commoners. These old feudal prejudices are ridiculous. But when we call one profession *respectable*, and another *less respectable*, do we not adopt them? When we talk of degrading ourselves by making tradesmen of our sons, do we not give sanction to the stupid and exploded notions of the

dark ages? When we admit that any citizen may *lose caste* by associating with any other honest and honourable man, do we not submit to a barbarism worse than Gothic—the barbarism of Hindostan and China?

Such notions should be laid aside with other useless lumber, as unfit for an age and a country where common sense gives law to society, and where real merit stamps the seal of respectability. It is but fighting shadows to offer arguments in opposition to such views. I gladly turn therefore from this to the more agreeable task of continuing the subject of my last lecture—the mechanic.

CHAPTER VI.

INTELLECTUAL CULTIVATION OF THE
MECHANIC—ITS IMPORTANCE.

I PROPOSE now to offer a few remarks on the intellectual cultivation of the mechanic, its importance, its means, and its rewards.

That intellectual cultivation, as a means of moral and social elevation, is as important to the mechanic as it is to any other citizen, is a truth so obvious as not to require argument or illustration for its support. But this is not all. He has stronger reasons for study than most other men. His very livelihood may depend in a great measure on a degree of skill in his art which cannot be acquired without a knowledge of the scientific principles and natural laws on which the arts are founded.

The whole system of mechanics' institutes, lyceums, lectures, and collections of specimens and machines, is nothing more nor less than an open confession made by the mechanics themselves, that intellectual cultivation has become absolutely necessary, in order that they may

keep pace with the spirit of the age—an acknowledgment that the time has come when science and art shall be firmly united, and the head and the hands shall work together.

Competition imposes upon the mechanic of the present day the necessity of study. Unless he keeps pace with the intelligence of the times, he will speedily find himself working at a ruinous disadvantage. While the workman who is content to remain stationary in scientific intelligence, neglects the opportunities of information afforded by the institute, the reading room, and a constant social intercourse with the most intelligent of his trade; his neighbour, availing himself of these advantages, may possess himself of new processes, new materials, or new facts, which will enable him to reduce his prices, and in a great measure to carry off the custom of the place.

It was not always thus. Monopoly and prescription formerly exerted an influence as injurious to the arts as that which is now exerted by competition is beneficial.

Indeed, as has been ably shown by a learned authority,* much mischief has been occasioned

* Governor Everett. Oration, p. 232.

in past times by the ignorance of artizans. He says:—

“The history of the progress of the human mind shows us, that for want of a diffusion of scientific knowledge among practical men, great evils have resulted, both to science and practice. Before the invention of the art of printing, the means of acquiring and circulating knowledge were few and ineffectual. The philosopher was, in consequence, exclusively a man of study, who, by living in a monastic seclusion, and by delving into the few books which time had spared,—particularly the works of Aristotle and his commentators,—succeeded in mastering the learning of the day; learning, mostly of an abstract and metaphysical nature. Thus, living in a world not of practice, but speculation, never bringing his theories to the test of observation, his studies assumed a visionary character. Hence the projects for the transmutation of metals; a notion not originating in any observation of the qualities of the different kinds of metals, but in reasoning, *a priori*, on their supposed identity of substance. So deep rooted was this delusion, that a great part of the natural science of the middle ages consisted in projects to convert the

baser metals into gold. It is plain, that such a project would no more have been countenanced by intelligent, well-informed persons, practically conversant with the nature of the metals, than a project to transmute pine into oak, or fish into flesh.

“ In like manner, by giving science wholly up to the philosophers, and making the practical arts of life merely a matter of traditionary repetition from one generation to another of uninformed artists, much evil of an opposite kind was occasioned. Accident, of course, could be the only source of improvement; and for want of acquaintance with the leading principles of mechanical philosophy, the chances were indefinitely multiplied against these accidental improvements. For want of the diffusion of information among practical men, the principles prevailing in an art in one place were unknown in other places; and processes existing at one period were liable to be forgotten in the lapse of time. Secrets and mysteries, easily kept in such a state of things, and cherished by their possessor as a source of monopoly, were so common, that *mystery* is still occasionally used as synonymous with *trade*. This also contributed to the loss of arts once brought to per-

fection, such as that of staining glass, as practised in the middle ages. Complicated machinery was out of the question; for it requires, for its invention and improvement, the union of scientific knowledge and practical skill. The mariner was left to creep along the coast, while the astronomer was casting nativities; and the miner was reduced to the most laborious and purely mechanical processes, to extract the precious metals from the ores that really contained them, while the chemist, who ought to have taught him the method of amalgamation, could find no use for mercury, but as a menstruum, by which baser metals could be turned into gold.

"At the present day, this state of things is certainly changed. A variety of popular treatises and works of reference have made the great principles of natural science generally accessible. It certainly is in the power of almost every one, by pains and time properly bestowed, to acquire a decent knowledge of every branch of practical philosophy. But still, it would appear, that, even now, this part of education is not on the right footing. Generally speaking, even now, all actual instruction in the principles of natural science is confined

to the colleges; and the colleges are, for the most part, frequented only by those intended for professional life. The elementary knowledge of science which is communicated at the colleges, is indeed useful in any and every calling; but it does not seem right that none but those intended for the pulpit, the bar, or the profession of medicine, should receive instruction in those principles which regulate the operation of the mechanical powers, and lie at the foundation of complicated machinery; which relate to the navigation of the seas, the smelting and refining of metals, the composition and improvement of soils, the reduction to a uniform whiteness of the vegetable fibre, the mixture and application of colours, the motion and pressure of fluids in large masses, the nature of light and heat, the laws of magnetism, electricity, and galvanism. It would seem that this kind of knowledge was more immediately requisite for those who are to construct or make use of labour-saving machinery, who are to traverse the ocean, to lay out and direct the excavation of canals, to build steam engines and hydraulic presses, to work mines, and to conduct large agricultural and manufacturing establishments. Hitherto, with some

partial exceptions, little has been done, systematically, to afford to those engaged in those pursuits, that knowledge which, however convenient to others, would seem essential to them. There has been scarce any thing, which could be called education for practical life; and those persons who, in the pursuit of any of the useful arts, have signalized themselves by the employment of scientific principles for the invention of new processes, or the improvement of the old, have been self-educated men."

It is argued, in opposition to this view of the matter, that the greatest discoveries and inventions have been produced by self-taught men, or by accidental circumstances, and that education is therefore unnecessary for the mechanic. The *fact* is indisputable; but the argument founded on it against the intellectual cultivation of working men, is not sound. Another fact will sufficiently refute it. Before education became generally diffused among mechanics, useful discoveries and inventions were much rarer than they are at present. When the great mass of mechanics could neither read nor write, the progress of invention was exceedingly slow. Now it is astonishingly rapid. In the middle ages great discoveries in the arts were

made at the rate of about one in a hundred years. Now they are made almost every year. Within the range of our own recollection two great motive powers, unknown before, have been rendered available in the arts of life, and scarcely a month passes without the announcement of some new contrivance for economizing the labour of man. This fact not only answers the argument already cited, but acts with tremendous power on the opposite side : thus,

The increase of education among mechanics increases the number of discoveries and improvements in the arts, by which human labour is abridged. This increase of power is an increase of happiness. It elevates the mechanic in the scale of social being, and adds to the comfort—the essential happiness of society. By means of the recent improvements in the arts effected by ingenious and educated mechanics, the amount of severe bodily labour previously imposed on that class of men is greatly diminished ; and this is no small gain.

“ We read,” says a shrewd writer, “ we read in many authors great encomiums on a life of *labour*, and of the superior blessings of peasants and hard-working men, whose temperate and abstemious lives not only make them enjoy an

uninterrupted state of health, but throw a crimson on their cheeks, and give a vigour to their bodies, the sons of wealth and affluence, they tell us, may in vain sigh for. This sounds well; but I own I am doubtful of the fact.

"If I compare the working part of mankind, who fare hard, with those who eat and drink of the 'good things of the earth,' I think I can discern better complexions, choicer animal spirits, and stronger bodies in the latter than in the former. Incessant labour and coarse and scanty food, have certainly a tendency to weaken the bodies of mankind, and wear them out before their time; and this we see is the case. What becomes then of the fine-spun theories of visionary authors who so greatly extol a laborious life? Why, they are destroyed, like other cobweb systems, that will not bear handling."

Education multiplies the inventions which lighten bodily labour. Education among mechanics is, therefore, a great blessing; and it should be a settled policy with this large and influential class of citizens, to encourage in every possible way the intellectual cultivation of all who compose their body.

The kind of education which is suitable for

a mechanic is that which is best accommodated to his circumstances. It should be liberal,—not minute. To learn the practical application of every science to every art, is not in the power of any single individual; but the mechanic, as well as the professed scholar, may learn the general laws and principles of science; and subsequently carry out to any degree which may seem expedient for him, those details which are particularly applicable to his own trade. His general acquaintance with the physical laws will enlarge his sphere of usefulness, and increase his chances of success in any particular art.

There are many good reasons why the American mechanics, more than those of any other nation, should cultivate science. One reason of this is the exalted station in society which he enjoys here, compared with that assigned to the same class of men in other countries.

In this connexion, I will again quote the authority of Governor Everett.

And first, he says, it is beyond all question, that what are called the mechanical trades of this country are on a much more liberal footing than they are in Europe. This circumstance not only ought to encourage those who

20*

pursue them, to take an honest pride in improvement, but it makes it their incumbent duty to do so. In almost every country of Europe, various restraints are imposed on the mechanics, which almost amount to slavery. A good deal of censure has been lately thrown on the journeymen printers of Paris, for entering into combinations not to work for their employers, and for breaking up the power presses, which were used by the great employing printers. I certainly shall not undertake to justify any acts of illegal violence, and the destruction of property. But when you consider that no man can be a master printer in France without a license, and that only eighty licenses were granted in Paris, it is by no means wonderful that the journeymen, forbidden by law to set up for themselves, and prevented by the power presses from getting work from others, should be disposed, after having carried through one revolution for the government, to undertake another for themselves. Of what consequence is it to a man, forbidden by the law to work for his living, whether Charles X. or Louis Philip is king?

In England, it is exceedingly difficult for a mechanic to obtain a settlement in any town

except that in which he was born, or where he served his apprenticeship. The object of imposing these restrictions is, of course, to enforce on each parish the maintenance of its native poor; and the resort of mechanics from place to place is permitted only on conditions with which many of them are unable to comply. The consequence is, they are obliged to stay where they were born; where, perhaps, there are already more hands than can find work; and, from the decline of the place, even the established artisans want employment. Chained to such a spot, where chance and necessity have bound him, the young man feels himself but half free. He is thwarted in his choice of a pursuit for life, and obliged to take up with an employment against his preference, because there is no opening in any other. He is depressed in his own estimation, because he finds himself unprotected in society. The least evil likely to befall him is, that he drags along a discouraged and unproductive existence. He more naturally falls into dissipation and vice, or enlists in the army or navy; while the place of his nativity is gradually becoming a decayed, and finally a rotten borough, and, as such, enables some rich nobleman to

send two members to parliament, to make laws against combinations of workmen.

In other countries singular institutions exist, imposing oppressive burdens on the mechanical classes. I refer now more particularly to the corporations, guilds, or crafts, as they are called, that is, to the companies formed by the members of a particular trade. These exist, with great privileges, in every part of Europe; in Germany, there are some features in the institution, as it seems to me, peculiarly oppressive. The different crafts in that country are incorporations recognized by law, governed by usages of great antiquity, with funds to defray the corporate expenses, and in each considerable town, a house of entertainment is selected, as the house of call (or harbour, as it is styled,) of each particular craft. No one is allowed to set up as a master workman, in any trade, unless he is admitted as a freeman, or member of the craft; and such is the stationary condition of most parts of Germany, that I understand that no person is admitted as a master workman in any trade, except to supply the place of some one deceased or retired from business. When such a vacancy occurs, all those desirous of being permitted to fill it, present a piece of

work, which is called their master-piece, being offered to obtain the place of a master workman. Nominally, the best workman gets the place; but you will easily conceive, that, in reality, some kind of favouritism must generally decide it. Thus is every man obliged to submit to all the chances of a popular election, whether he shall be allowed to work for his bread; and that too, in a country where the people are not permitted to have any agency in choosing their rulers. But the restraints on journeymen, in that country, are still more oppressive. As soon as the years of apprenticeship have expired the young mechanic is obliged, in the phrase of the country, to *wander* for three years. For this purpose he is furnished by the master of the craft in which he has served his apprenticeship, with a duly authenticated wandering book, with which he goes forth to seek employment. In whatever city he arrives, on presenting himself, with this credential, at the house of call, or harbour, of the craft in which he has served his time, he is allowed, gratis, a day's food and a night's lodging. If he wishes to get employment in that place, he is assisted in procuring it. If he does not

wish to, or fails in the attempt, he must pursue his wandering; and this lasts for three years, before he can be any where admitted as a master. I have heard it argued, that this system had the advantage of circulating knowledge from place to place, and imparting to the young artisan the fruits of travel and intercourse with the world. But however beneficial travelling may be, when undertaken by those who have the capacity to profit by it, I cannot but think that to compel every young man, who has just served out his time, to leave his home, in the manner I have described, must bring his habits and morals into peril, and be regarded rather as a hardship than as an advantage. There is no sanctuary of virtue like home.

You will see, from these few hints, the nature of some of the restraints and oppressions to which the mechanical industry of Europe is subjected. Wherever governments and corporations thus interfere with private industry, the spring of personal enterprise is ungent. Men are depressed with a consciousness of living under control. They cease to feel a responsibility for themselves, and, encountering obstacles whenever they step from the beaten path, they give up improvement as hopeless. I need

not remark on the total difference of things in America. We are apt to think, that the only thing in which we have improved on other countries, is our political constitution, whereby we choose our rulers, instead of recognizing their hereditary rights. But a much more important difference between us and foreign countries is wrought into the very texture of our society; it is that generally pervading freedom from restraint, in matters like those I have just specified. In England, it is said that forty days undisturbed residence in a parish gives a journeyman mechanic a settlement, and consequently entitles him, should he need it, to support from the poor rates of that parish. To obviate this effect, the magistrates are on the alert, and instantly expel a new comer from their limits, who does not possess means of giving security, such as few young mechanics command. A duress like this, environing the young man, on his entering into life, upon every side, and condemning him to imprisonment for life on the spot where he was born, converts the government of the country,—whatever be its name,—into a despotism.

Such is the condition of mechanics abroad; such, thanks to our free institutions and the

bounty of a good Providence, is not the condition of mechanics here. They may—in fact they must neglect the cultivation of their minds; but the American mechanic is inexcusable if he neglects the great privileges which distinguish him from the less fortunate European.

Another reason why the American mechanic should cultivate his intellectual powers as far as possible, is the vastly wider field which is opened to him by the extent and the resources of his country, and the ever active enterprize of its citizens. The European mechanic is hedged in on every side by restriction, and by competitors without number. All the trades there are full. In our country we see the reverse. Here we have not men enough to perform the work required. The demand for mechanical industry has never been fully met, and cannot be, for a long time to come. The immense amount of our land, the preponderance of agricultural industry, and the increasing demands of commerce, open an unlimited field to mechanical enterprise. We may infer what may yet be done from what has already been done. The service which the mechanical ingenuity of Americans has already rendered to

the country is at once a source of pride and of hope. Take, for example, the service rendered to the cotton growing interest by Whitney's invention of the saw-gin; or that rendered to internal commerce and to agriculture by Fulton's introduction of the steamboat into general use; or that rendered to every consumer in the country by inventors and manufacturers concerned in the production of cotton and woollen fabrics. These inventions and improvements, by increasing the resources of the country, have greatly increased the demand for mechanical products. Whether, therefore, the American mechanic addresses himself to increasing the quantity or improving the quality of his manufactures, the field before him is wide enough for his greatest powers and his most unwearied activity. In entering upon this field, let him remember that knowledge is power, and he will neglect no opportunity of improving his mind.

CHAPTER VII.

MEANS OF INTELLECTUAL CULTIVATION
ACCESSIBLE TO THE MECHANIC.

SUPPOSING that the reasons why an American mechanic should be well educated are sufficiently established, let us next consider the means which are at his disposal or may be brought within his reach.

1. Of course the first and most important means of intellectual cultivation are the schools; and those to the improvement of which the efforts of mechanics as a body can be most serviceably directed are the *public* schools. Wherever a system of public schools exists, it is the interest of the mechanic, in common with all other citizens, to aid in rendering it as perfect as possible. I believe that it is essential to the perfection of a system of public schools, that not only elementary instruction should be dispensed to the children of all citizens who require it; but that schools of a higher order should be placed within the reach of all pupils whose parents may wish to obtain

the advantages of higher instruction for their offspring. Experience shows that it is not a difficult matter to create a supply of this higher instruction equal to the demand, even where the provision of primary instruction is most abundant. In Boston, where the population is over eighty thousand, and the primary and grammar schools are sufficient to accommodate every applicant for admission without delay, the High School for twenty years has averaged only ninety pupils; this being the whole number of qualified candidates offered for admission.

In Philadelphia the supply has certainly been hitherto equal to the demand, as all applicants for admission to the High School who were qualified for the higher studies at the time of their examination have been admitted. I believe that the number of scholars who will leave the school every year to enter upon the active business of life, will always be found equal to those who shall be qualified for admission and shall present themselves for examination. The advantages resulting from High Schools are not confined to the pupils who receive instruction at those schools. The stimulus afforded by the hope of attaining admission

to them acts upon all the other schools, producing greater exertion and a more rapid progress in learning. In fact the whole system is not only improved, but greatly extended, by the existence of higher classes of schools. This is apparent in this city,* where a greater number of primary and grammar schools have been created since the erection of the High School than at any previous period of the same length. The High School furnishes to the future mechanic precisely the liberal kind of instruction which will be most available to him in his trade; and in some instances gives minute practical information directly applicable to the arts; as for example, in the mathematical and drawing lessons, and the lessons, lectures and experiments on chemistry, natural philosophy and natural history; other parts of the course of instruction, as the training in logic, rhetoric and composition, have more direct reference to the pupil's future position in the community as a citizen, a public officer, a parent, or a teacher. Such institutions it is the interest of every man to sustain; of the rich, who do not avail themselves of this advantage for their own children,

* Philadelphia.

equally with those who are not rich, and therefore need their aid. In fact, the laws which distribute property equally among heirs, render it probable that the grand-children, or great-grand-children of the richest man in any of our communities will become pupils in the public schools. It is, therefore, the rich man's interest to pay heavy taxes, if need be, in order that the public schools may be rendered perfect. 2. The inheritance which he will thus transmit to his posterity, will last long after his wealth shall have been scattered to the winds. I pass with reluctance from this interesting part of the subject, to the next means of intellectual improvement for the mechanic, viz.: the Mechanic's Institute. Any youth who has been taught to read and write, may derive advantages from the lectures, experiments and library of the Mechanic's Institute; and the system of operations in these admirable institutions is so liberally expanded, that the most accomplished scholar may also increase the amount of his practical knowledge by having recourse to the means of improvement which they afford. 3. But the best of all instruction is self instruction, and the most available means which the young man who is determined to

21*

instruct himself can employ, are the library and the apparatus which are immediately at his own disposal—under his own roof—in his own apartment. The great secret of self improvement is to dedicate a portion of every day to private study. Consult the biographies of a long line of self taught men who have advanced science and the arts by their individual exertions, and you will find in most instances that the brilliant discovery which astonished the world was the result of private study and unassisted experiment. You will find also that the hour redeemed from ordinary business, and consecrated to some favourite scientific inquiry, was the great discoverer's choicest recreation, the delight of the day, the great reward of many labours and cares. We all have our favourite enjoyments, apart from our daily labour. While one man *reads* for recreation, another plays upon the flute or takes a ride, or sketches a landscape, or talks politics, or tells stories to his children. All these amusements are excellent and refreshing in their season—all are looked forward to with pleasure; but a sweeter recreation than any of these awaits the man who is at once a hard worker and a devotee of science. Often in the course of a busy day do

his thoughts bound forward to the happy moment when he shall enter the sanctuary of his own study, leaving his toils and cares behind, and, "the world forgetting, by the world forgot," shall busy himself in his favourite pursuits, studying, experimenting, calculating, till his brain is weary with pleasurable excitement, and tired nature claims the right of repose. In order to profit by study it is not absolutely necessary, but it is certainly very convenient and agreeable to have a place, a room, be it ever so small or so poorly furnished, which the student, the self instructor, may call his own—his castle—his sanctuary. Here he treasures up his little library of books, few perhaps, but choice and well beloved. Here he has his desk, papers, and his collection of curious or useful things, each fraught with associations, each the occasion of a lesson to himself. The mineral, which is but a common pebble to the visitor who comes in to look at his cabinet, has a magic power in it for the collector himself. It brings back to his recollection the glorious mountain towering to the skies—the cataract—the deep cavern, or the broad prairie, where the wonderful gem was found—wonderful by the power of association which it has over the mind

of its finder. The well worn volume, which is mere paper and print to another, is a precious treasure to him, who has learnt from it the great laws of nature, the lore of antiquity, or the sweets of poetry. Every article in this retreat of studious leisure has a value to the owner, as it is connected with the developement of his higher faculties. Every article is praised for having been, in its turn, the instrument of self cultivation. It would occupy too much time to enter here into a detailed review of the various means of self cultivation to which the student may have recourse in the retirement of his own room. These will form the subject of a future chapter.

CHAPTER VIII.

REWARDS OF INTELLECTUAL CULTIVATION ACCESSIBLE TO THE MECHANIC.

I WILL now offer a few remarks on the rewards of intellectual cultivation. Liberal knowledge, like virtue, is in a certain sense its own reward. The developement of the intellectual powers is attended with positive gratification, resulting from a sense of increased power, and the satisfying of curiosity respecting the laws of nature. The famous story of the rapture of Archimedes when he arrived at his beautiful demonstration of a well known mathematical truth, is but one among a thousand proofs that science rewards her votaries on the instant, pays her workmen, in solid coin, by the day—by the hour. This is the sweetest and best reward of intellectual labour. It is that which is most diligently sought and most highly prized.

But there are other rewards, only incidental and inferior, but still worthy of some consideration.

1. Liberal knowledge and accomplishments confer the advantage of an elevated and influential position in society. It is generally understood that society exacts from each of its members some price of admission to its coteries and saloons. One brings fashion, another the wealth and consequence of his family, another his musical or conversational talents, another his celebrity as an author or traveller, or distinguished stranger. Among the rest the votary of science prefers his claim, and finding it admitted, takes a place in society on an independent and respectable ground. He is admitted for what he *is*, not for what he *has*, or what his ancestors *had*.

2. Again, liberal knowledge gives its possessor the means of enjoyment in sickness, in retirement, and in old age. He who has learnt to converse with the master spirits of other times, is never at a loss for society or amusement. Give him a book and he is happy—or, failing the book, his previous cultivation makes the communion of his own thoughts or the practice of composition a sufficient occupation to pass delightfully those hours of loneliness and silence which are a weariness to the illiterate man.

3. To the advantages which the scientific mechanic enjoys in the prosecution of his trade we have already adverted. We will name but one more before closing the present consideration of the subject. It is this :—The members of any particular trade, by earnestly uniting in the use of the various means of intellectual cultivation within their reach, may greatly increase the respectability, wealth and influence of that trade. By possessing their own library, reading room, museum and apparatus, and by stimulating the exertions of every member of the trade, master, journeyman, and apprentice, they will soon come to be recognised as a scientific body; and will not only insure to themselves the other rewards of science, but will receive the grateful acknowledgments of their fellow citizens as public benefactors.

Such are the rewards of intellectual cultivation attainable by those who are engaged in the mechanical trades. The example of Franklin, Watt, Arkwright, and a host of other illustrious men, show what mechanics *have* done. It remains for the rising generation in our own happy land to show what mechanics *can* do.

CHAPTER IX.

THE MECHANIC'S STUDIES.

Books are, generally speaking, too voluminous; writers descend too much into minutiae; and it is an old observation, that where men are determined to write every thing which can be said on any subject, they may write to eternity. Hence it is that a man of sense and erudition need but open a single page of many a modern volume to lay it aside forever. It is said of Didymus, an ancient grammarian, that he had written so much that he knew not his own productions, and having once abused a work for its absurdity, it was found to be his own. I fear the race of Didymus is not extinct.*

To read all books on all subjects would require an uninterrupted attention during the longest life, even of an antediluvian. To read only the most celebrated, written in a few languages, is an employment sufficient to fill up every hour of laborious application. For the

* Northmore.

sake then of saving time, and of directing the judgment of the inexperienced, it becomes an useful attempt to suggest some general hints, which may tend to facilitate selection. One rule of the greatest consequence is, to read only, or chiefly, the original treatises in all the various departments of science or of literature. Nearly the same space of time, though not the same degree of attention, is necessary to peruse the faint copies of imitative industry, as would appropriate to the student the solid productions of native genius. This rule is more particularly to be observed on the first entrance on study. The foundation must be laid deeply, and formed of solid materials. The superstructure will often admit slight and superficial appendages. When we have studied the fine relics of those who have lived before us, we may derive much pleasure from attending to the additional labours of contemporary genius. But to begin with these is to found, like the fool recorded in the gospel, an edifice in the sand.*

The merit of a book consists in, 1, New facts; 2. New inferences from established facts;

* Knox's Essays.

3. A better arrangement; 4. A more complete collection of facts; 5. Information. When a book is destitute of these requisites, it may be condemned, without mercy, as of no use whatever, and immediately sold by weight to the cheesemonger, or consigned to any other base or more ignoble purpose. When it is not destitute of these, it should be reprieved, acquitted, or applauded, according to the requisites which it possesses.*

On the choice of books, most excellent advice is given by Dr. Watts, from whom, and other authors, has been compiled a pocket volume "on the Improvement of the Mind," in which various interesting matter relating to books, reading, conversation, study, &c. are treated of. Happy are they, says Fenelon, who being disgusted with all violent pleasures, know how to content themselves with the sweets of an innocent life. Happy are they, who are diverted, at the same time that they are instructed, and please themselves by enriching their minds with knowledge. Wherever they may be thrown by adverse fortune, they will carry their own entertainment with

* Dr. Mosley.

them ; and the uneasiness, which preys on others, even in the midst of their pleasures, is unknown to those who can employ themselves in reading. Happy are they who love books and are not deprived of them.

Among the other improvements of the present age, the art of puffing appears to have arrived at such perfection that it is impossible to select books by their titles, or from some of our booksellers' account of them in their advertisements. A person who would make a preference and choose the best, must read much beyond the title page. From a hand bill which accidentally lies on the compiler's desk, the following encomiums are bestowed on very immethodical and inferior works. "A fascinating introduction, superior to every preceding attempt of the kind, and deserving of universal preference." "The most approved and generally adopted book ever published, and undoubtedly the best extant." Such parade of applause may pass with those who do not compare and discriminate, and their number is unfortunately not small.

Mr. Pratt ingeniously laments the strange circumstance, that authors themselves have been the most bitter detractors of the talents

and reputations of each other. A grievance far more disgraceful, if not more injurious, to the literary character, than any other species of criticism. Indeed it would be difficult to find any set of enemies among men, any persons, whose passions and interests are at variance, so full of acerbity, of open violence, or of concealed malice, as the most eminent writers have proved themselves to each other, in their contentions of rivalry. The "republic of letters" is a very common expression among Europeans, and yet, when applied to the learned of Europe, is the most absurd which can be imagined, since nothing is more unlike a republic, than the society which goes by that name. In truth, almost every member of this fancied commonwealth is desirous of governing, and none willing to obey: each looks upon his fellow as a rival, not an assistant in the same pursuit. They calumniate, they injure, they despise, they ridicule, they worry, and assassinate each other. If one man write a book which pleases, others write books to show that he might have given still greater pleasure, or should not have attempted to please. If one happen to hit upon something new, numbers are ready to assure the public that all this was

no novelty to them or the learned; that Cardanus, or Brunus, or some other author, too dull to be generally read, had anticipated the discovery. Their jarring constitution, instead of being styled the republic of letters, should be entitled the *anarchy* of literature. It is true, there are some of superior abilities, who reverence and esteem each other; but their mutual admiration is not sufficient to shield off the contempt of the crowd. The wise are but few, and they praise with a feeble voice; the vulgar many, and roar in reproaches. The truly great seldom unite in societies, have few meetings, and no cabals: the dunces hunt in full cry, till they have run down a reputation, and then snarl and fight with each other about dividing the spoil." No task would be more easy to the most superficial observer, than that of producing numerous instances of glaring partiality in the journals of several of our critics by profession. It appears sometimes from their neglect in reading with care the book which they undertake to criticize, so as to comprehend the author's views; sometimes the narrowness of party spirit warps their decisions, in open contempt of the power of genius and originality. Sometimes a publisher's name on

22*

the cover, connected with the imprint of the book, is a clue by which neglect, injustice, narrow-minded selfishness, and misrepresentation, may be unravelled; and sometimes the critic's private pique, as a contemporary author, is obvious.

Poetic compositions, whether in ancient or modern languages, may be read at vacant hours, with some advantage, because many passages contain practical rules relating to moral economy and religion. Many elegant and ingenious sentiments and descriptions may also be found among the writings of poets, well worth committing to memory; and the measure of verse greatly assists recollection.

The mere art of rhetoric never yet formed an English orator. It is one of those artificial assistances of genius, which genius wants not, and of which dullness can little avail itself. But as excellent books have been written on this subject, the general scholar will not fail to pay it some attention. Let him then read Cicero on the Orator, and Quintilian's Institutes, and he need not trouble himself with those meagre treatises which give a hard name to natural modes of expression, and teach us that, like Hudibras, we cannot open our mouths,

• but out there flies a trope.* So much of rhetoric as teaches the art of speaking and writing with elegance and dignity, in order to instruct, persuade and please, is certainly most valuable. Grammar teaches only propriety; but rhetoric raises upon it purity and clearness of language, elegant thoughts, variety of expression, and lively figures. The duty of the orator is to state interesting truths with such probability and evidence as may gain belief, and with such force and simplicity as may produce conviction. He must be able to demonstrate, to delight, and to work on the passions.

Probably nothing has contributed more to generate apposite habits of mind than the early taste for reading. Books gratify and excite our curiosity in innumerable ways. They force us to reflect. They hurry us from point to point. They present direct ideas of various kinds, and they suggest indirect ones. In a well written book we are presented with the maturest reflections, or the happiest flights, of a mind of uncommon excellence. It is impossible that we can be much accustomed to such companions, without attaining some resemblance of

* Dr. KNUA.

them. He who revels in a well chosen library, has innumerable dishes, and all of admirable flavour. His taste is rendered so acute, as to distinguish the nicest shades of difference. His mind becomes ductile, susceptible to every impression, and gains new refinement from each. His varieties of thinking baffle calculation, and his powers, whether of reason or imagination, become eminently vigorous.*

Exclusive of all regard to interest, and of preparation for the exercise of any art or profession, says Dr. Knox, a taste for pleasing books is surely eligible, if it were only for the sake of enabling an ingenious man to pass his days innocently, calmly, and pleurably. The pleasures of letters are certainly great to those who have been early devoted to them, and they are of all others the easiest to be obtained. For with respect to books we may say, "These are friends, no one of whom ever denies himself to him who calls; no one takes leave of his visitor till he has rendered him happier and more pleased with himself. The conversation of no one of these is dangerous, neither is the respect to be paid to him attended with expense.

* Godwin's Enquirer.

You may take what you please from them. What happiness, what a glorious old age awaits him who is placed under the protection of such friends! He will have those whom he may consult on the most important, and the most trifling matter, whose advice he may daily ask concerning himself; from whom he may hear the truth without insult, praise without adulation, and to whose similitude he may conform himself.”*

As soon as we have obtained, by reading, a competent knowledge of a book or particular subject, it will contribute greatly to animate us in proceeding still farther, if we talk of it either with our equals in attainments, or with the learned and experienced. In such conversation we venture to advance an opinion; our self-love renders us solicitous to maintain it, we seek the book as an auxiliary, we therefore read it with eager attention. In this manner an attachment to books and literary employments is gradually formed, and what began in labour or necessity, becomes a choice, and constitutes the most agreeable pleasure.

There is no study so dry, but by fixing our attention upon it, we may at last find it capa-

* Seneca.

ble of affording great delight. Metaphysics and mathematics, even in their abstrusest parts, are known to give the attentive student a very exalted satisfaction. Those parts, then, of human learning, which in their nature are more entertaining, cannot fail of being beloved in a high degree, when the mind is closely and constantly applied to them.

In order to acquire the power and habit of fixing the attention, it will be first necessary to summon a very considerable degree of resolution. In beginning the study of a new language, or any book of science, which presents ideas totally strange, the mind cannot but feel some degree of reluctance or disgust. But let the student persevere; and in a very short time, the disgust will vanish, and he will be rewarded with entertainment. Till this takes place, let him make it an inviolable rule, however disagreeable, to read a certain quantity, or for a certain time, and he will infallibly find, that what he entered upon as a task, he will continue as his best amusement.

A due degree of variety will contribute greatly to render reading agreeable. For though it be true that not more than one or two books should be read at once; yet, when finished, it

will be proper, if any weariness be felt, to take up an author who writes in a different style, or on a different subject; to change from poetry to prose, and from prose to poetry; to intermix the moderns with the ancients; alternately to lay down the book and take up the pen; and sometimes to lay them both down, and enter with alacrity into agreeable company and public diversions. The mind, after a little cessation, returns to books with all the voracious eagerness of a literary hunger. But the intermissions must not be long, or frequent enough to form a habit of idleness or dissipation.

The morning has been universally approved as the best time for study; but at all hours and in all seasons, if we can restrain the licentious roving of imagination; soothe the passion of the heart, and command our attention, so as to centre it on the subject we examine, we shall find it amply rewarded. Attend closely; and close attention to any worthy subject will always prove solid satisfaction. But particularly in reading it may be depended on as approved truth, that the degree of profit as well as pleasure, derived from it, will ever be proportioned to the degree of attention.*

* Knox's Essays, No. 82.

There are some mechanic aids in reading, which may prove of great utility. Montaigne placed at the end of the book which he intended not to re-peruse, the time he had read it, with a concise decision on its merits. He has obliged his admirers with giving several of these annotations. The striking passages in a book may be noted on a blank leaf, and the pages referred to with a word of criticism. Seneca, in sending some volumes to his friend Lucilius, accompanied them with notes on particular passages, that, as he observes, you who only aim at the useful, may be spared the trouble of examining them entirely. I have seen books noted by Voltaire with a word of censure or approbation on the page itself, which was his usual practice; and these volumes are precious to every man of taste.*

I would have every one try to form an opinion of an author himself, though modesty may restrain him from mentioning it. Many are so anxious to have the reputation of taste, that they only praise the authors whose merit is indisputable. I am weary of hearing of the sublimity of Milton, the elegance and

* D'Israeli's Miscellanies.

harmony of Pope, and of the original, untaught genius of Shakspeare. Such hackneyed remarks are made by those who know nothing of nature, and can neither enter into the spirit of those authors, nor understand them.*

Temperance in eating and drinking, will contribute more to improve the natural force or abilities of the mind, than any art or any application. It is related of the unfortunate young Chatterton, that he was remarkably abstemious, and that it was a frequent and favourite maxim with him, that a man might arrive at any height of improvement, or effect the most arduous undertaking, by dint of industry and abstinence. He practised what he thought; and this in some degree accounts for his uncommon attainments and productions, at an age when the full-fed heir can scarcely read and write. I recommend to all students the perusal of Dr. Cheney's Medical Advice; or I will give it to them in a few words. "Take the least and the lightest food, under which you can be easy." Your soul will thus feel fresh vigour, your life will be longer and happier, and your conduct wiser.†

The neglect of writing in early life is the

* Mary Wollstonecraft.

† Dr. Knox.

reason that almost every line of our scholars and gentry (who seem to pride themselves in their bad penmanship) stands in need of an interpreter. As this art is purely mechanical, and perfected by practice only, it is foreign from my purpose to prescribe rules for its attainment. I will venture however to assert, that a plain, upright hand, resembling the round roman print is preferable to the ridiculous flourishes and slopes of writing-masters; and my opinion is founded on a very simple reason, it is more legible.*

Plain writing, says Dr. Gregory, clear of flourishes, and very upright, is certainly the most proper for every station of life, and will remain intelligible longer than any other. It may be learned with less time and trouble, and may be written more expeditiously. I have long been of this opinion, and was happy to find it countenanced by the authority of Dr. Knox, and Dr. Beattie. Their popularity may perhaps be of weight in correcting the whimsical and unintelligible mode of writing, which has been introduced by ignorant schoolmasters. I perfectly agree with the latter, that the writing,

* Yorks.

which approaches nearest the Roman printed character, is the completest. Pope was taught to write by imitating and copying the Roman character of printed books, in which kind of writing he always excelled. [The *Italic* printed character appears better adapted for the purpose of writing than the Roman.] A gentleman informed, by letter, his country friend in Lincolnshire, who had done him some recent favour, how much he was obliged, and that he should soon send him an *equivalent*. Not being accustomed to *fashionable* scrawls, he read it that his friend would send him an *elephant*, and, building a barn at the time, actually fitted up a stall for the reception of his expected present. The arrival, however, of a barrel of oysters, a few days afterwards, helped him to the right reading, by putting him in possession of a more suitable equivalent than an elephant. This is a fact, and occurred a few years since.*

*Rede's Anecdotes, 1799.

CHAPTER X.

THE MECHANIC'S STUDIES.

To learn the rudiments of grammar by rote, is not the way to understand grammar. The *mind* must be addressed and convinced. Of what use is it to vex a boy's memory with the definition of a noun, when the definition itself is not clear to his understanding? We may as well show him the figure of a triangle on paper, and expect him to comprehend its nature, by a definition of its properties. The fact is, the tender mind is not capable of abstract reasoning; consequently, every subject which implies the generalization of ideas, should be first unfolded by evident and palpable demonstration. Thus, a boy is taught in our schools to gabble that "a noun is the name of any person, place, or thing, as John, London, Honour;" yet I will venture to assert, that not one in ten thousand comprehends what he says. An analysis of language was never formed, until men were enabled to observe the turns of speech which custom authorizes; there were

poets and orators before a grammar was ever thought of; it would be useless to teach either systems of rhetoric or composition to a child, who had not learnt, by frequent use, the proper idioms of his own language; and that therefore the best models of beautiful writing should be set before him, previous to his being brought to judge of them by any determined rules.*

If grammar be taught, it must be to one who can speak the language; how else can he be taught the grammar of it? This is evident from the practice of the wise and learned nations among the ancients. They made it a part of education to cultivate their own, not foreign tongues. The Greeks counted all other nations barbarous, and had a contempt for their languages. And though the Greek learning grew in credit among the Romans, towards the end of their commonwealth, yet it was the Roman tongue which was made the study of their youth. It was their own language which they were to make use of, and therefore it was their own language they were instructed and exercised in.

But more particularly to determine the pro-

* H. R. Yorke.

23*

per season for grammar, I do not see how it can reasonably be made any one's study, but as an introduction to rhetoric. When it is thought time to put any one on the care of polishing his tongue, and of speaking better than the illiterate, then is the time for him to be instructed in the rules of grammar, and not before: for grammar is designed not only to teach men to speak, but to speak correctly, and according to the exact rules of the tongue, which is one part of elegance; there is little use of the one to him who has no need of the other; where rhetoric is not necessary, grammar may be spared.*

The cumbersome heap of worthless rules with which grammars are crowded, has urged some into the extreme of discarding them. They have observed that a quicker progress has been made in a language by learning it by mere rote, and from thence have extravagantly concluded that grammars are unnecessary. Without the assistance of the rules of construction, it is difficult to speak the living languages well; to say nothing of reducing science to principles, which contribute to form

* Locke.

the judgment. But grammars ought to be constructed rationally, whereas many, so far from being adapted to the capacities of children, suppose them to be half philosophers in the outset. This is evident from the connection which the rules have with things with which children are unacquainted.*

With a view of making the study of language agreeable and pleasant, particularly to boys, it is necessary that the subject on which students are employed to read, be interesting. The judicious teacher can easily collect authors, in almost every language, whose writings are calculated to arrest and interest the mind at an early period of life. In order, however, to render the study and comprehension of such works easy, difficult passages should always be satisfactorily explained in the student's vernacular tongue, by notes; and they should, for beginners, be accompanied with literal translations.†

Two things are requisite in learning a language; a knowledge of words, and skill in putting them together in writing or speaking. The former is much the more easy of the two,

* De l'Education par M. de Crousaz. † Dr. Cowan.

and consequently ought to go first: to intermix any foreign stuff, as grammar with it, is throwing an obstacle in the way of boys, and hindering their progress. They are to be kept to but one thing at a time, as much as possible. To trouble them with variety, unless by way of refreshing their memories, or to prevent their forgetting what they have already learnt, I think a grand mistake in education, and one main occasion of that miserable work which boys make of it in most schools.

Though grammar be a matter of importance, the parts of language which relate to the signification of words, and phraseology are of greater importance. In the latter departments, a pupil cannot be overburdened; in the former, there are many things not worth committing to memory; and he who intends to make a boy a critic in grammar, will unavoidably leave him deficient in other more necessary things. It would be the same as if a man should take care to let his son be furnished with elegant shoes, while the rest of his body was clothed in rags.*

I very much doubt whether any child, pro-

* Clarke's Essay on Education.

digies excepted, be capable of learning two languages, till it arrive at the age of twelve or thirteen. I have indeed seen little wonderful prattlers, who were imagined to talk five or six different languages. I have heard them successively talk in German, in Latin, French, and Italian words. They made use, it is true, of the different terms of five or six dictionaries; but they spoke nothing but German. In a word, fill a child's head with as many synonymous terms as you please, you will change his words only, but not his language, for he can know but one. No sooner have they gone through the rudiments of the grammar, of which they absolutely understand nothing, than they are set to render a discourse spoken in their native tongue into Latin words; when they are advanced a little farther, they are engaged to patch up a theme in prose, by tacking together the phrases of Cicero, and in verse with centos from Virgil. They then begin to think themselves capable of talking Latin. And who is there to contradict them.*

To learn a language grammatically, or even to speak it, allowing for bad pronunciation, is

* Rousseau, b. 2.

at any time of life an easy acquisition. We are told that Themistocles learnt the Persian language in one year, and a year is sufficient time to learn any language. It is too great an attention to the rules of grammar which retards our improvement. Rousseau has therefore properly warned us against correcting the grammatical errors of children, who never fail in due time to correct themselves. Mr. Locke recommends the same method to be adopted in learning the dead languages. "The Latin tongue," he observes, "would easily be taught, if the tutor being constantly with his pupil would talk nothing else to him, and make him answer still in the same language." But to this reasoning I object; for, not to mention the difficulty of finding tutors who can speak these languages well, it is the constant daily habit of conversing *with every one around us*, which facilitates the acquisition of living tongues, and this is particularly the case with children, who learn more in one hour's game of play with their equals, than in a day's discourse with their tutors. Another strong objection to this method arises from its inutility. The only use of learning the dead languages is, as Milton says, to "study the solid things in them." Now even allowing

that a pupil may be competent to hold a conversation in Latin, which certainly is making a great allowance, if we take into consideration the difficulty of applying an ancient language to modern customs, yet he will reap but little benefit from this acquisition when he comes to read the philosophic works of Cicero, or Quintilian, or the histories of Livy or Tacitus. The same reasoning is in some measure applicable to modern tongues. A foreigner who can speak English well, may be unable to comprehend either the sublime beauties of Shakspeare, or the nervous eloquence of Johnson. But though I dissent from Mr. Locke as to the best means of acquiring the dead languages, yet of the method which I am now about to propose, I speak with the greater confidence, being supported in my opinion not only by my own experience, but by the practice of Roger Ascham, the celebrated tutor to Queen Elizabeth. The custom established in schools of obliging the scholars to learn the grammar by heart, cannot be too much deprecated. The grammar, like the dictionary, is only a book of reference; "to read it therefore by itself, is," as Ascham well observes, "tedious for the master, hard for the scholar, cold and uncomfortable for them both."

It certainly is irksome for boys who have it to learn, because it conveys no pleasurable ideas, and much time is thus unnecessarily lost. Mr. Dyer in his life of Robinson, has observed that "Mr. Robinson's way of acquiring a knowledge of languages, was to sit down to an author, without any previous knowledge of the grammar, and to refer only to it in the same manner as the dictionary." This being premised, let us now suppose that my pupil is to be instructed in the Greek language. He accordingly procures a grammar and dictionary; but instead of labouring a twelvemonth in committing the former to memory, he reads it over once or twice merely to acquire some little insight into the nature of the language. His tutor then procures for him the best work of the purest Greek writer; suppose the Republic of Plato, or the Cyropædia of Xenophon, which is better adapted to youth. We now sit down together, with our pens, ink and paper, to translate one of the easiest passages, making due reference to our grammar and dictionary. Having done this we shut our books, and put our translations carefully by in our drawers. We then proceed to other business; perhaps to the carpenter's chest, or the garden tools. The

next morning we take out our translations, and retranslate them into the best Greek we are able, which we compare with, and correct by the original text. This translation and retranslation, increasing gradually in quantity, we continue to practise, till we become masters of the language, never omitting a single day, how small soever be the portion. It should be remembered, that, as we increase in knowledge, the version of one day is not retranslated till the interval of three or four days has elapsed, in order that the pupil may not translate by rote. By these means the language is learnt not only with greater facility, but to much greater perfection; for the scholar acquires a knowledge of the peculiar cast of the language, and the particular points in which it differs from his own. Another advantage attending this system of translation, is, that the pupil cannot suffer from the ignorance of his tutor, both of them having the best possible standard for their guide. Nor perhaps is it a matter of small importance that the tutor is improving himself, at the very time that he is instructing his pupil; and I am certain that the appearance only of studying one's-self, tends much to increase the love of study in youth.

In addition to translating, we must not omit to mention the advantages which accrue, particularly to maturer minds, from reading and reciting the works of the great masters. By this we imbibe not only a taste for their purity and elegance of diction, but frequently participate of their animation, and the fire of their genius.*

Let none despair of acquiring, not only a competent but a critical knowledge of language, at whatever age a taste for such studies may be imbibed. Julius Scaliger, a profound critic, knew not the letters of the Greek alphabet at the age of forty years. Dr. Franklin learnt to speak French when upwards of seventy. Eugene Aram, without any assistance, learnt Latin, Greek, Hebrew, French, Chaldee, Arabic, and the Celtic.

Whatever be the advantages, or defects of the English language, as it is our own language, it deserves a high degree of our study and attention, both with regard to the choice of words which we employ, and with regard to the syntax, or the arrangement of these words in a sentence. We know how much the Greeks and the Ro-

* Northmore.

mans, in their most polished and flourishing times, cultivated their own tongues. We know how much study both the French and the Italians have bestowed on theirs. Whatever knowledge may be acquired by the study of other languages, it can never be communicated with advantage, unless by such as can write and speak their own language well. Let the matter of an author be ever so good and useful, his compositions will always suffer in the public esteem, if his expression be deficient in purity and propriety. At the same time, the attainment of a correct and elegant style, is an object which demands application and labour. If any imagine they can catch it merely by the ear, or acquire it by a slight perusal of some of our good authors, they will find themselves much disappointed. The many errors, even in point of grammar, the many offences against purity of language, which are committed by writers who are far from being contemptible, demonstrate, that a careful study of the language is previously requisite, in all who aim at writing it properly.*

The application of a child to a dead lan-

* Dr. Blair.

guage, before he be acquainted with his own, is a lamentable waste of time, and highly detrimental to the improvement of his mind. The general principles of grammar are common to all languages; a noun is the same in English, French, Latin, Greek, &c. The varieties of languages are easily acquired by observation and practice, when a preliminary knowledge of our own grammar is obtained. But, the comprehension of our native tongue, is not the only good preparative for the study of other languages. Some previous acquaintance with the general nature of things is necessary to the accomplishment of this end, in order that our literary progress may not be obstructed merely by words. For, although it be useful to leave some difficulties in the way of a child, that he may exercise his mind in overcoming them, yet he must not be disgusted by too many or too great impediments. Our whole attention should consist in proportioning the difficulties to his powers, and in offering them to his consideration individually. If Latin were made the primary object of a child's lesson, he would lose a vast portion of time in the study of grammar; he would be incapable of perceiving the beauties of that language, because he would not

have acquired any previous knowledge. No benefit therefore could possibly accrue, from reading in the Latin tongue subjects which he could not understand in his own. But, by his becoming well acquainted with our best poets and prose writers, he will easily learn, independently of the number of ideas which he will gain thereby, the general rules of grammar; several examples will unfold them, and a proper application of others may be soon made without difficulty. Besides, he will acquire taste and judgment, and be well prepared to feel the beauties of a foreign tongue, when he begins to feel the beauties of his own. His knowledge being also extended and diversified, it will be found that the sole difficulty attendant on the study of Latin, consists in learning words; so that to obtain a just knowledge of things he must apply himself to such Latin authors only as are within the reach of his capacity, and whose writings he can comprehend with the same facility as if they were written in his native language. By this plan, he will easily acquire the Latin tongue, treasure up fresh knowledge as he advances, and experience no disgusts in the study of it. Nothing can be more useless than to fatigue a

24*

child, by filling his memory with the rules of a language which he does not yet understand. For, of what advantage is the knowledge of its rules, if he be unable to apply them? We should wait, therefore, until reading has gradually enlightened his mind, and the task becomes not irksome to him. When he has studied his own language, we should anticipate the principal difference between the Latin and English syntax. His surprise in perceiving an unexpected difference, will excite his curiosity, and effectually remove all distaste. After this, and not before, we may devote a part of each day to Latin; but it ought never to be the first object of his studies.* The best English Grammar for the purpose of self instruction is Frost's Practical Grammar, published by Thomas, Cowperthwait & Co., Philadelphia.

The Latin authors are possessed of uncommon excellence. One kind of excellence they possess which is not found in an equal degree in the writers of any other country: an exquisite skill in the use of language; a happy selection of words; a beautiful structure of phrase; a transparency of style; a precision

* H. R. Yorks.

by which they communicate the strongest sentiments in the directest form ; in a word, every thing which relates to the most admirable polish of manner. Other writers have taken more licentious flights, and produced greater astonishment in their readers. Other writers have ventured more fearlessly into unexplored regions, and cropped those beauties which hang over the brink of the precipice of deformity. But it is the appropriate praise of the best Roman authors, that they scarcely present us with one idle and excrescent clause, that they continually convey their meaning in the choicest words. Their lines dwell upon our memory ; their sentences have the force of maxims, every part vigorous, and seldom any thing which can be changed but for the worse. We wander in a scene where every thing is luxuriant, yet every thing vivid, graceful and correct.

It is commonly said, that you may read the works of foreign authors in translations. But the excellencies above enumerated are incapable of being transfused. A diffuse and voluminous author, whose merit consists chiefly in his thoughts, and little in the manner of attiring them, may be translated. But who can translate Horace ? who endure to read the transla-

tion? Yet who is there, acquainted with him only through this medium, but listens with astonishment and incredulity to the encomiums he has received from the hour his poems were produced? The Roman historians are the best which ever existed. The dramatic merit and the eloquence of Livy; the profound philosophy of Sallust; the rich and solemn pencil of Tacitus, all ages of the world will admire. Add to this, that the best ages of Rome afford the purest models of virtue which are any where to be met with. Mankind are too much inclined to lose sight of all which is heroic, magnanimous and public spirited. Modern ages have formed to themselves virtue, rather polished than sublime, which consists in petty courtesies, rather than in the tranquil grandeur of an elevated mind. It is by turning to Fabricius, and men like Fabricius, that we are brought to recollect what human nature is. Left to ourselves, we are apt to sink into effeminacy and apathy. It is by comparison only that we can enter into the philosophy of language. It is by comparison only that we can separate ideas, and the words by which those ideas are ordinarily conveyed. It is by collating one language with another that we detect all the

shades of meaning through the various inflections of sense which the same word suffers, as it shall happen to be connected with different topics.

He who is acquainted with only one language, will probably always remain in some degree the slave of language. From the imperfectness of his knowledge, he will feel himself at one time seduced to say what he did not mean, and at another time will fall into errors of this sort without being aware of it. It is impossible he should understand the full force of words. He will sometimes produce ridicule where he intended to produce passion. He will search in vain for the hidden treasures of his native tongue. He will never be able to employ it in the most advantageous manner. He cannot be well acquainted with its strength and weakness. He is uninformed respecting its true genius and discriminating characteristics. But the man who is competent to, and exercised in the comparison of languages, has attained to his proper elevation. Language is not his master, but he is the master of language. Things hold their just order in his mind; ideas, first, and then words. Words therefore are used by him, as the means of communicating

or giving permanence to his sentiments; and the whole magazine of his native tongue is subjected at his feet.

• Latin is a language which will furnish us with the etymology of many of our own words; but it has perhaps peculiar recommendations as a praxis in the habits of investigation and analysis. Its words undergo an uncommon number of variations and inflexions. These inflections are more philosophically appropriated, and more distinct in their meaning, than the inflections of any language of a more ancient date. As the words in Latin composition are not arranged in a philosophical or natural order, the mind is obliged to exert itself to disentangle the chaos, and is compelled to yield an unintermitted attention to the inflections. It is therefore probable that the philosophy of language is best acquired by studying this language. Practice is superior to theory; and this science will perhaps be more successfully learned, and more deeply imprinted, by the perusal of Virgil and Horace, than by reading a thousand treatises on universal grammar. Examples seem to correspond to what is here stated. Few men have written English with force and propriety, who have been wholly

unacquainted with the learned languages. Our finest writers and speakers have been men who amused themselves during the whole of their lives with the perusal of the classics. Nothing is generally more easy than to discover by his style whether a man has been deprived of the advantages of a literary education. He who has not been accustomed to refine on words, and discriminate their shades of meaning, will think and reason after a very inaccurate and slovenly manner.

Two qualities are especially necessary to any considerable improvement of human understanding; an ardent temper, and a habit of thinking with precision and order. The study of the Latin language is particularly conducive to the production of the last of these qualities. In this respect the study of Latin and geometry might perhaps be recommended for a similar reason. In the study of language and its inflections, all is in order. Every thing is subjected to the most inflexible laws. The mind therefore which is accustomed to it, acquires habits of order, and of regarding things in a state of clearness, discrimination, and arrangement.

The discipline of mind, here described, is

of inestimable value. He who is not initiated in the practice of close investigation is constantly exposed to the danger of being deceived. His opinions have no standard, but are entirely at the mercy of his age, his country, the books he chances to read, or the company he happens to frequent. His mind is a wilderness. It may contain excellent materials, but they are of no use. He is unable to regulate his mind, and sails at the mercy of every breath of accident or caprice. Such a person is ordinarily found incapable of application or perseverance. All talent may perhaps be affirmed to consist of analysis and dissection, the turning a thing on all sides, and examining it in all its variety of views. An ordinary man sees an object just as it happens to be presented to him, and sees no more. But a man of genius takes it to pieces, inquires into its cause and effects, remarks its internal structure, and considers what would have been the result, if its members had been combined in a different way, or subjected to different influences. The man of genius gains a whole magazine of thoughts, where the ordinary man has received one idea; and his powers are multiplied in proportion to the number of ideas on which they are to be em-

ployed. Now there is perhaps nothing which contributes more eminently to this subtilizing and multiplication of mind, than an attention to the structure of language.

Let it be taken for granted that the above arguments sufficiently establish the utility of classical learning; it remains to be determined whether it be necessary that it should form a part of the education of youth. It may be alleged, that, if it be a desirable acquisition, it may with more propriety be made when a person is arrived at years of discretion; that it will then be made with less expense of labour and time, that the period of youth ought not to be burdened with so vexatious a task, and that our early years may be more advantageously spent in acquiring the knowledge of things, than of words. In answer to these objections it may be remarked, that it is not certain that, if the acquisition of the rudiments of classical learning be deferred to our riper years, it will ever be made. It will require strong inclination and considerable leisure. A few active and determined spirits will surmount the difficulty; but many who would derive great benefit from the acquisition, will certainly never arrive at it. The age of youth seems particularly adapted

to the learning of words. The judgment is then small, but the memory is retentive. In our riper years we remember passions, facts, and arguments; but it is for the most part in youth that we retain the very words in which they are conveyed. Youth easily contents itself with this employment, especially where it is not enforced with particular severity. Acquisitions which are disgusting in riper years, are often found to afford young persons no contemptible amusement. It is not perhaps true that, in teaching languages to youth, we are imposing on them an unnecessary burden. If we would produce right habits in the mind, it *must* be employed. Our early years must not be spent in lethargic indolence. An active maturity must be preceded by a busy childhood.

It has often been said that classical learning is an excellent accomplishment in men devoted to letters, but that it is ridiculous, in parents whose children are destined to more ordinary occupations, to desire to give them a superficial acquaintance with Latin, which in the sequel will infallibly fall into neglect. A conclusion opposite to this is dictated by the preceding reflections. We can never foresee the future destination and propensities of our children;

yet, no portion of classical instruction, however small, need be wholly lost. Some refinement of mind, some clearness of thinking, will almost certainly result from grammatical studies. Though the language itself should ever after be neglected, some portion of a general science has thus been acquired, which can scarcely be forgotten. Though our children should be destined to the *humblest* occupation, that does not seem to be a sufficient reason for our denying them the acquisition of *some* of the most fundamental documents of human understanding.*

The following method of teaching Latin, recommended by R. L. Edgeworth, F. R. S., appears exceedingly simple, natural, and pleasing, and furnishes useful hints for those who desire to teach themselves. "When children have by gentle degrees, and by short and clear conversations, been initiated in general grammar, and familiarized to its technical terms, the first page of tremulous Lilly will lose much of its horror. It is taken for granted, that the pupil can read and understand English, and that he has been accustomed to employ a dictionary. He may

* Godwin's Enquirer.

now proceed to translate from some easy book, a few short sentences : the first word will probably be an adverb or conjunction ; either of them may be readily found in the Latin dictionary, and the young scholar will exult in having translated one word of Latin ; but the next word, a substantive or verb, perhaps will elude his search. Now the grammar may be produced, and something of the various terminations of a noun may be explained. If *musam* be searched for in the dictionary, it cannot be found, but *musa* catches the eye, and with the assistance of the grammar it may be shown, that the meaning of words may be discovered by the united helps of the dictionary and grammar. After some days' patient continuation of this exercise, the use of the grammar, and of its uncouth collection of words and syllables, will be apparent to the pupil ; he will perceive that the grammar is a sort of appendix to the dictionary. The grammatical formulæ may then, by gentle degrees, be committed to memory ; and when once got by heart, they should be assiduously preserved in the recollection. After the preparation which we have recommended, the singular number of a declension will be learnt in a few minutes, by a child of

ordinary capacity, and after two or three days' repetition, the plural number may be added. The whole of the first declension should be well fixed in the memory before a second be attempted. During this process a few words at every lesson may be translated from Latin to English, and such nouns as are of the first declension may be compared with *musa*, and may be declined according to the same form. Tedious as this method may appear, it will in the end be found expeditious. Omitting some of the theoretic or didactic part of the grammar, which should only be read, and which may be explained with care and patience, the whole of the declensions, pronouns, conjugations, the list of prepositions, conjunctions, interjections, some adverbs, the concords, the common rules of syntax, may be comprised with sufficient repetitions in about two or three hundred lessons of ten minutes each : that is to say, ten minutes' application of the scholar in the presence of the teacher. A young boy should never be set to learn a lesson by heart when alone. Forty hours ! Is this tedious ? If you are afraid of losing time, begin a few months earlier ; but begin when you will, forty hours is surely no great waste of time ; the whole, or

25*

even half of this short time, is not spent in the labour of getting jargon by rote; each day some slight advance is made in the knowledge of their combinations. What we insist on is, that *nothing be done to disgust the pupil*: steady perseverance, with uniform gentleness, will induce habit, and nothing should ever interrupt the regular return of the daily lesson. If absence, business, illness, or any other cause, prevent the attendance of the teacher, a substitute must be appointed; the idea of relaxation on Sunday, or a holiday, should never be permitted. In most public seminaries above one third, in some nearly one half, of the year is permitted to idleness: it is the comparison between severe labour and dissipation which renders learning hateful. Johnson is made to say, by one of his female biographers, that no child loves the person who teaches him Latin; yet the writer would not take all the doctor's fame, and all the lady's wit and riches, in exchange for the hourly, unfeigned, unremitting friendship which he enjoys with a son who had no other master than his father. So far from being laborious or troublesome, he has found it an agreeable employment to instruct his children in grammar and the learned languages. In the midst of a